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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/685,996

10/14/2003

Kazuhiro Shimada

81788.0259

5833

26021 7590 02/09/2007
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EXAMINER

PHAN, HANH

ART UNIT

PAPER NUMBER

2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/09/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/685,996

Applicant(s)

SHIMADA ET AL.

Examiner

Hanh Phan

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 23 is/are rejected.
- 7) ☒ Claim(s) 21 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

-In the abstract, the form and legal phraseology often used in patent claims, such as "means" and "said" should be avoided. For example, in the abstract section, the phrases "said first light receiving element" and "said light receiving element row" should be avoided. Correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2613

4. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

-Claim 3 recites the limitation "**said amplifier circuit**" in lines 6 and 7. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Chow et al. (US Patent No. 6,609,840).

Regarding claim 1, referring to Figure 1, Chow et al. teaches an optical receiver comprising:

a first light receiving element (i.e., a light receiving element 14, Fig. 1) to convert an optical signal to an electric signal and to output the electric signal from one end thereof (i.e., col. 7, lines 65-67 and col. 8, lines 1-17); and

a light receiving element row (i.e., a light receiving element row 15, Fig. 1) connected to the other end of the first light receiving element to supply electric power to the first light receiving element, the light receiving element row including a plurality of second light receiving elements connected in series (i.e., Fig. 1, col. 7, lines 65-67 and col. 8, lines 1-17).

Regarding claim 4, Chow et al. further teaches a light emitting section to apply light to the light receiving element row (i.e., Figure 1 of Chow et al).

Regarding claim 5, Chow et al. further teaches the light emitting section includes a light emitting diode or a laser diode (i.e., Figure 1, col. 7, lines 65-67 and col. 8, lines 1-17).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al. (US Patent No. 6,609,840) in view of Prior Art Figure 5.

Regarding claim 2, Chow et al. teaches all the aspects of the claimed invention as set forth in the rejection to claim 1 above except fails to specifically teach an amplifier

Art Unit: 2613

circuit connected to the other end of the first light receiving element, the amplifier circuit amplifying the electric signal output from the first light receiving element and outputting the amplified electric signal. However, Prior Art Figure 5 teaches an amplifier circuit 4 connected to the other end of a light receiving element 2, the amplifier circuit 4 amplifying the electric signal output from the light receiving element 2 and outputting the amplified electric signal. Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the amplifier circuit connected to the other end of the light receiving element as taught by Prior Art Figure 5 in the system of Chow et al. One of ordinary skill in the art would have been motivated to do this since allowing increasing the power level of the signal to a desired level.

Regarding claim 3, the combination of Chow et al and Prior Art Figure 5 teaches the light receiving element row supplies an electric power to the first light receiving element, the electric power being higher than an electric power which is supplied from an electric power source to the amplifier circuit (i.e., Fig. 1 of Chow et al and Prior Art Figure 5).

Regarding claim 6, the combination of Chow et al and Prior Art Figure 5 teaches a capacitor (i.e., capacitor 5, Prior Art Fig. 5) connected in parallel with the light receiving element row.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al. (US Patent No. 6,609,840) in view of Spaeth et al (US Patent No. 5,299,046) OR Tsuji et al (US Patent No. 5,664,035).

Regarding claim 7, Chow et al. teaches all the aspects of the claimed invention as set forth in the rejection to claim 1 above except fails to specifically teach the light receiving element row and the first light receiving element are formed on a same chip. Spaeth et al, from the same field of endeavor, likewise teaches an optical receiver, an optical transmitter and an optical transceiver (Figs. 1 and 4). Spaeth et al further teaches the light receiving element row and the first light receiving element are formed on a same chip (i.e., Figures 1 and 4, col. 4, lines 34-67, col. 5, lines 1-24 and col. 6, lines 32-57), **OR** Tsuji et al, from the same field of endeavor, likewise teaches an optical receiver, an optical transmitter and an optical transceiver (Figs. 1 and 2b). Tsuji et al further teaches the light receiving element row and the first light receiving element are formed on a same chip (i.e., Figures 1 and 2b, col. 4, lines 12-67, col. 5, lines 1-67 and col. 6, lines 1-2). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the light receiving element row and the first light receiving element are formed on a same chip as taught by Spaeth et al **OR** Tsuji et al in the system of Chow et al. One of ordinary skill in the art would have been motivated to do this since allowing reducing the size, weight and cost of the device and reducing the power consumption of the device.

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al. (US Patent No. 6,609,840) in view of Prior Art Figure 5 and further in view of Spaeth et al (US Patent No. 5,299,046) **OR** Tsuji et al (US Patent No. 5,664,035).

Regarding claim 8, Chow et al. as modified by Prior Art Figure 5 teaches all the aspects of the claimed invention as set forth in the rejection to claim 1 above except fails to specifically teach the light receiving element row, the first light receiving element and the amplifier circuit are formed on a same chip. Spaeth et al, from the same field of endeavor, likewise teaches an optical receiver, an optical transmitter and an optical transceiver (Figs. 1 and 4). Spaeth et al further teaches the light receiving element row and the first light receiving element are formed on a same chip (i.e., Figures 1 and 4, col. 4, lines 34-67, col. 5, lines 1-24 and col. 6, lines 32-57), **OR** Tsuji et al, from the same field of endeavor, likewise teaches an optical receiver, an optical transmitter and an optical transceiver (Figs. 1 and 2b). Tsuji et al further teaches the light receiving element row and the first light receiving element are formed on a same chip (i.e., Figures 1 and 2b, col. 4, lines 12-67, col. 5, lines 1-67 and col. 6, lines 1-2). Although Spaeth et al **OR** Tsuji does not specifically teach the light receiving element row, the first light receiving element and the amplifier circuit are formed on a same chip. However, it would have been obvious to obtain the light receiving element row, the first light receiving element and the amplifier circuit are formed on a same chip in order to reduce the size, weight and cost of the device, save space and reducing the power consumption of the device. Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the light receiving element row, the first light receiving element and the amplifier circuit are formed on a same chip as taught by Spaeth et al **OR** Tsuji et al in the system of Chow et al. One of ordinary skill in the art would have been motivated to

Art Unit: 2613

do this since allowing reducing the size, weight and cost of the device, saving space and reducing the power consumption of the device.

11. Claims 9, 10, 12-15, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al (US Patent No. 6,626,584) in view of Spaeth et al (US Patent No. 5,299,046) OR Chow et al. (US Patent No. 6,609,840).

Regarding claim 9, referring to Figure 2, Fujita et al. teaches an optical transmitter comprising:

a light emitting element (i.e. light emitting element 4, Fig. 2) of surface light emission type to convert an electric signal to an optical signal and transmit the optical signal (i.e., col. 10, lines 65-67 and col. 11, lines 1-65); and

a light receiving element (i.e., photodiode 14, Fig. 2) exposed to light emitted from the light emitting element (i.e., Fig. 2, col. 10, lines 65-67 and col. 11, lines 1-65);

wherein light emitted from a top surface of the light emitting element is used as an optical signal, and the light receiving element is exposed to light emitted from a rear surface of the light emitting element (i.e., Fig. 2, col. 10, lines 65-67 and col. 11, lines 1-65).

Fujita et al differs from claim 9 in that he fails to teach a light receiving element row exposed to light from the light emitting element to generate electric power and the light receiving element row including a plurality of light receiving elements connected in series. Spaeth et al, from the same field of endeavor, likewise teaches an optical transmitter, optical receiver and optical transceiver (Figs. 1 and 4). Spaeth et al further teaches the light receiving element row including a plurality of light receiving elements

Art Unit: 2613

connected in series (i.e., Figures 1 and 4, col. 4, lines 34-67, col. 5, lines 1-24 and col. 6, lines 32-57), **OR** Chow et al, from the same field of endeavor, likewise teaches an optical transmitter, optical receiver and optical transceiver (Fig. 1). Chow et al further teaches the light receiving element row including a plurality of light receiving elements connected in series (i.e., Figure 1, col. 7, lines 65-67 and col. 8, lines 1-17). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the light receiving element row taught by Spaeth et al **OR** Chow et al in the system of Fujita et al. One of ordinary skill in the art would have been motivated to do this since allowing providing the electric power for the device.

Regarding claim 10, the combination of Fujita et al and Spaeth et al **OR** Chow et al teaches a mirror surface section to reflect a part of light to said light receiving element row, said light being emitted from the top surface of said light emitting element (Figs. 2, 4 and 7-9 of Fujita et al and Figs. 1 and 4 of Spaeth et al **OR** Fig. 1 of Chow et al).

Regarding claims 12-14, 19 and 20, the combination of Fujita et al and Spaeth et al **OR** Chow et al teaches a mounting substrate consisting of a conductive material; a light receiving chip mounted on said mounting substrate, said light receiving chip including said light receiving element row formed therein; and an optical transmitter chip mounted on said light receiving chip, said optical transmitter chip including said light emitting element formed therein (Figs. 2, 4 and 7-9 of Fujita et al and Figs. 1 and 4 of Spaeth et al **OR** Fig. 1 of Chow et al).

Regarding claim 15, referring to Figure 2, Fujita et al teaches an optical transceiver comprising:

Art Unit: 2613

a light emitting element (i.e. light emitting element 4, Fig. 2) of surface light emission type to convert an electric signal to an optical signal and transmit the optical signal (i.e., col. 10, lines 65-67 and col. 11, lines 1-65);

a first light receiving element (i.e., a first light receiving element 5, Fig. 2) to receive the optical signal and convert the optical signal to an electric signal, then output the electric signal (i.e., col. 10, lines 65-67 and col. 11, lines 1-65); and

a light receiving element (i.e., photodiode 14, Fig. 2) exposed to light emitted from the light emitting element (i.e., Fig. 2, col. 10, lines 65-67 and col. 11, lines 1-65);

wherein light emitted from a top surface of the light emitting element is used as an optical signal, and the light receiving element is exposed to light emitted from a rear surface of the light emitting element (i.e., Fig. 2, col. 10, lines 65-67 and col. 11, lines 1-65).

Fujita et al differs from claim 15 in that he fails to teach a light receiving element row exposed to light from the light emitting element to generate electric power and the light receiving element row including a plurality of light receiving elements connected in series. Spaeth et al, from the same field of endeavor, likewise teaches an optical transmitter, optical receiver and optical transceiver (Figs. 1 and 4). Spaeth et al further teaches the light receiving element row including a plurality of light receiving elements connected in series (i.e., Figures 1 and 4, col. 4, lines 34-67, col. 5, lines 1-24 and col. 6, lines 32-57), **OR** Chow et al, from the same field of endeavor, likewise teaches an optical transmitter, optical receiver and optical transceiver (Fig. 1). Chow et al further teaches the light receiving element row including a plurality of light receiving elements

Art Unit: 2613

connected in series (i.e., Figure 1, col. 7, lines 65-67 and col. 8, lines 1-17). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the light receiving element row taught by Spaeth et al OR Chow et al in the system of Fujita et al. One of ordinary skill in the art would have been motivated to do this since allowing providing the electric power for the device.

12. Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Fujita et al (US Patent No. 6,626,584) in view of Spaeth et al (US Patent No. 5,299,046) OR Chow et al. (US Patent No. 6,609,840) and further in view of Prior Art Figure 5.

Regarding claims 11 and 17, Fujita et al. as modified by Spaeth et al OR Chow et al teaches all the aspects of the claimed invention as set forth in the rejection to claim 9 above except fails to specifically teach a capacitor connected in parallel with the light receiving element row. However, Prior Art Figure 5 teaches a capacitor connected in parallel with the light receiving element. Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the capacitor connected in parallel with the light receiving element as taught by Prior Art Figure 5 in the system of Fujita et al modified by Spaeth et al OR Chow et al. One of ordinary skill in the art would have been motivated to do this since allowing providing a constant voltage and the electric power provide for the device can be stabilized.

Art Unit: 2613

13. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Fujita et al (US Patent No. 6,626,584) in view of Spaeth et al (US Patent No. 5,299,046) OR Chow et al. (US Patent No. 6,609,840) and further in view of Stein (US Patent No. 4,989,9350).

Regarding claim 16, Fujita et al. as modified by Spaeth et al OR Chow et al teaches all the aspects of the claimed invention as set forth in the rejection to claim 15 above except fails to specifically teach a first amplifier circuit having an output terminal connected to the light emitting element, the first amplifier circuit amplifying an electric signal and outputting the amplified electric signal to the light emitting element; and a second amplifier circuit having an input terminal connected to the first light receiving element, the second amplifier circuit amplifying an electric signal supplied from the first light receiving element and outputting the amplified electric signal. However, Stein teaches a first amplifier circuit having an output terminal connected to the light emitting element, the first amplifier circuit amplifying an electric signal and outputting the amplified electric signal to the light emitting element; and a second amplifier circuit having an input terminal connected to the first light receiving element, the second amplifier circuit amplifying an electric signal supplied from the first light receiving element and outputting the amplified electric signal (i.e., Fig. 1, col. 3, lines 64-67 and col. 4, lines 1-45). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first amplifier circuit having an output terminal connected to the light emitting element, the first amplifier circuit amplifying an electric signal and outputting the amplified electric signal to the

light emitting element, and a second amplifier circuit having an input terminal connected to the first light receiving element, the second amplifier circuit amplifying an electric signal supplied from the first light receiving element and outputting the amplified electric signal as taught by Stein in the system of Fujita et al modified by Spaeth et al OR Chow et al. One of ordinary skill in the art would have been motivated to do this since allowing increasing the power level of the signal to a desired level.

14. Claims 18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Fujita et al (US Patent No. 6,626,584) and Spaeth et al (US Patent No. 5,299,046) OR Chow et al. (US Patent No. 6,609,840) in view of Stein (US Patent No. 4,989,935) and further in view of Prior Art Figure 5.

Regarding claims 18 and 23, Fujita et al. as modified by Spaeth et al OR Chow et al and Stein teaches all the aspects of the claimed invention as set forth in the rejection to claim 16 above except fails to specifically teach a capacitor connected in parallel with the light receiving element row. However, Prior Art Figure 5 teaches a capacitor connected in parallel with the light receiving element. Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the capacitor connected in parallel with the light receiving element as taught by Prior Art Figure 5 in the system of Fujita et al modified by Spaeth et al OR Chow et al and Stein. One of ordinary skill in the art would have been motivated to do this since allowing providing a constant voltage and the electric power provide for the device can be stabilized.

Art Unit: 2613

Allowable Subject Matter

15. Claims 21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.


HANH PHAN
PRIMARY EXAMINER